Scaling Up to Excellence: Practicing Model Scaling for Photo-Realistic Image Restoration In the Wild

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Abstract

We introduce SUPIR (Scaling-UP Image Restoration), a groundbreaking image restoration method that harnesses generative prior and the power of model scaling up. Lever-aging multi-modal techniques and advanced generative prior, SUPIR marks a significant advance in intelligent and realistic image restoration. As a pivotal catalyst within SUPIR, model scaling dramatically enhances its capabil-ities and demonstrates new potential for image restoration. We collect a dataset comprising 20 million high-resolution, high-quality images for model training, each en-riched with descriptive text annotations. SUPIR provides the capability to restore images guided by textual prompts, broadening its application scope and potential. Moreover, we introduce negative-quality prompts to further improve perceptual quality. We also develop a restoration-guided sampling method to suppress the fidelity issue encountered in generative-based restoration. Experiments demonstrate SUPIR's exceptional restoration effects and its novel capac-ity to manipulate restoration through textual prompts.